TECHNOLOGY DEPT.

15¢

March 8, 1952

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

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MAR 14 1952
DETROIT

President with Winners

See Page 149

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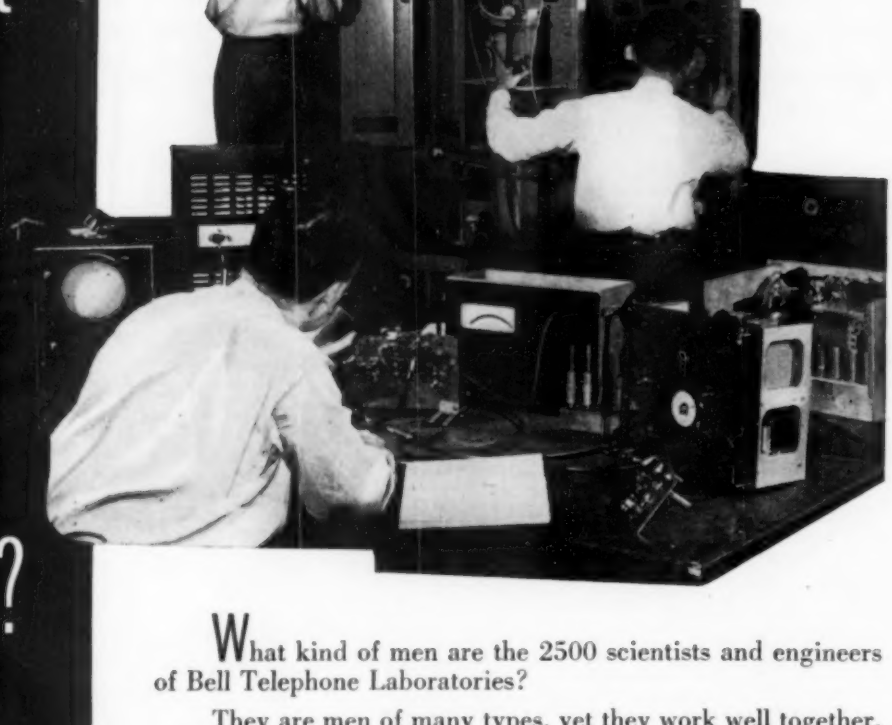
VOL. 61 NO. 10 PAGES 145-160

What kind of men?



What kind of men are the 2500 scientists and engineers of Bell Telephone Laboratories?

They are men of many types, yet they work well together, for all have good minds as a foundation, years of study in the fundamentals of their science and in the methods of research and design. Vital, too, is their teamwork—for without the co-operation of many individuals the products of research and development could never be perfected.

Above all else these men have "the spirit to adventure, the wit to question, and the wisdom to accept and use."

Such men can develop the world's finest telephone systems—and have done so.

Perhaps there is a place among them for you. Write the Employment Director, Bell Telephone Laboratories, New York 14.

BELL TELEPHONE LABORATORIES

• EXPLORING AND INVENTING, DEVISING AND PERFECTING FOR CONTINUED IMPROVEMENTS AND ECONOMIES IN TELEPHONE SERVICE

PHYSICS

Change in Atomic Material By Tube System in Reactor

➤ "CHANGE" IS the order when Brookhaven scientists use a pneumatic tube system to insert and withdraw a material into the big atomic reactor at Upton, N. Y., for neutron bombardment.

Like the familiar change-making system used in department stores, this gadget is one of the hitherto secret facts about the interior of the atomic "furnace" that has just been declassified. The Brookhaven reactor is not used for weapons manufacture, but is used for research and the manufacture of radioisotopes, which is the purpose of the pneumatic system.

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INVENTION

Transmitting Sound Through Ocean Receives Patent

➤ "SOFAR"—a method of transmitting sound thousands of miles through ocean water—has now been patented. Its inventor, Dr. Maurice Ewing, Woods Hole, Mass., who developed the method during the war, has assigned the patent, number 2,587,301, to the U. S. Navy.

Dr. Ewing discovered, while he was working on submarine detection methods, that there is a "sound channel" below the surface of the ocean, down about 4,200 feet, through which sound will travel great distances without much dissipation.

Consequently, if a depth bomb or other explosive device were set off at this depth, receiving stations thousands of miles away could hear the sound. By triangulation, two or more of these stations can pinpoint the location of the explosion to within a mile or so.

Explosives have been designed to be part of the equipment of lifeboats and rafts on ships and planes. Stations have been set up at various points around the Pacific Ocean.

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PSYCHOLOGY

Sudden Snake Jump Makes Monkeys Neurotic

➤ MONKEYS, WHEN a snake jumps at them during dinner, become neurotic, even if the snake is only a rubber one, Dr. Jules H. Massermann of Northwestern University, Evanston, Ill., reported at a New York Academy of Sciences conference on neuroses.

The monkey runs shrieking away from the food, not even stopping to examine the snake. After repetitions of this experience, the monkeys become tense and anxious, forget what they have learned, are jumpy and may even refuse food, thus showing symptoms of neurosis in humans.

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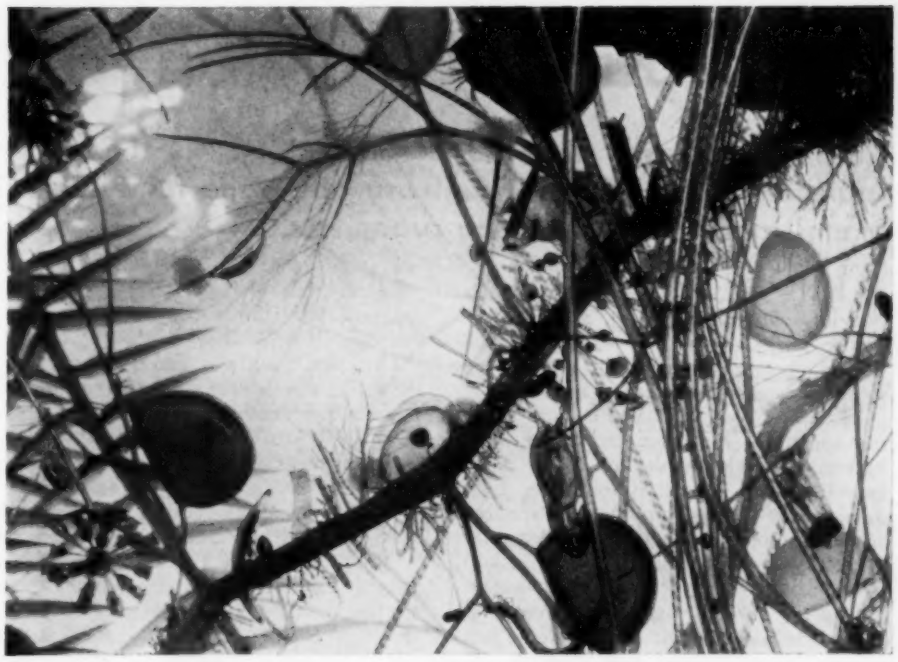

LIFE IN A WATER DROPLET—Model of life found in one drop of water from a fresh water pond in New England, magnified one hundred diameters or one million times. This underwater world display has just been placed on exhibit at the American Museum of Natural History in New York.

CHEMISTRY

Morphine Synthesized

Man's long struggle to synthesize the alkaloid chemicals found in plants is capped by the complete synthesis of the pain-easing drug, morphine.

➤ THE COMPLETE synthesis of morphine, pain-easing drug of the opium poppy, has been accomplished by Dr. Marshall Gates of the University of Rochester, N. Y. Announcement of this feat, in which a Swiss girl, Gilg Pschudi, assisted, will reach fellow chemists through a forthcoming issue of JOURNAL OF THE AMERICAN CHEMICAL SOCIETY.

The achievement, in the words of one chemist, marks "the last great mountain peak to be surmounted" in man's long struggle to synthesize the alkaloid chemicals found in plants. Only exception, now, is strychnine and no one is believed too interested in synthesizing this drug. Among other alkaloids found in plants are caffeine, nicotine and quinine.

Synthesis of morphine does not mean a cheap source of the chemical, for drug addicts or legitimate users. Synthetic morphine could not be made for $1,000 a gram, which is about one-thirtieth of an ounce or about 20 grains. On the legitimate market, one grain of morphine extracted from the poppy plant source costs about five cents and would sell at retail to the patient for about 10 cents, though usually it is dispensed in quarter or half grain doses.

The process by which Dr. Gates and Miss Pschudi succeeded in synthesizing the drug is extremely complicated, requiring some 20 to 30 steps. Probably only 10 or a dozen chemists in this country could follow it. Dr. Gates has been working on the problem for more than 10 years. Swiss and German chemists are hard at work on the problem, also.

Some of the intermediate chemicals used in the synthesis were made in the 1930's by Dr. L. F. Small of the National Institutes of Health. Dr. Small at that time was trying to make a synthetic chemical that would duplicate morphine's pain-relieving effect without addiction properties. He did not realize that some of the chemicals he made would later facilitate the synthesis of morphine itself.

The synthesis is a tremendous scientific achievement, but is not expected to have any practical follow-up. The reason is that there are now better chemicals which are easier to make for use instead of morphine.

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BIOPHYSICS

"Hot" Sugars Developed

Specifically labeled carbon atoms in the sugar molecule will help scientists learn about the fundamental chemical processes in living organisms.

➤ "HOT" SUGAR, much too "hot" to be put in your coffee or tea, will soon be giving scientists new knowledge of fundamental chemical processes in the body of living organisms, from man to bacteria.

This "hot" sugar is hot because it has one atom of radioactive carbon 14 in its molecule. Labeled with this atom, it can be followed in its path through the body. From study of its course and the reactions it enters into, scientists hope to learn much that may prove useful in fighting cancer, tooth decay and maybe many other diseases.

Bacteria probably will be among the first living organisms to be fed "hot" sugar. Scientists hope that through this, they can find a vulnerable point in the body chemistry of bacteria that can be attacked by some chemical. Then more specific drugs to destroy disease germs could be developed.

Just which line of disease fighting can be helped by the radioactive sugars cannot be told at present. Scientists now are in the map-making stage of study of the body's handling of such sugars. As one of them puts it, the different roads the sugars take through the body must be learned before the autos on the roads can be counted. In other words, the normal sugar-handling processes must first be learned before the scientists can search for abnormal processes in any disease.

A method of making specifically labeled radioactive sugars has been developed by Dr. Horace Isbell and associates at the National Bureau of Standards. The carbon 14 atom, which labels the sugar, can be put in different positions on the sugar molecule, thus giving scientists even more specific information about what happens to the sugar in the body.

This "hot" sugar is not only too "hot" for use as a sweetener of tea or coffee, it is also far too expensive. Cost of making it runs about $28,000 an ounce.

Development of the specifically labeled radioactive sugars was announced by Dr. Isbell to a group of youthful scientists, the 40 high school boys and girls who were in Washington for the finals of the Science Talent Search conducted by SCIENCE SERVICE for Westinghouse scholarships.

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TECHNOLOGY

New Way Found to Clean Atmospheric Pollution

➤ TO PREVENT atmospheric pollution, a successful experimental plant to clean smoke from ferromanganese blast furnaces has been developed. It reclaims manganese particles and re-uses stack gases for fuel.

A report on the development was presented to the Air Pollution Abatement Conference in New York by C. A. Bishop, research associate of the United States Steel Co. Different gas-cleaning equipment is needed, Mr. Bishop said, for ferromanganese blast furnaces than for pig iron blast furnaces.

Fumes from ferromanganese furnaces contain a dust particle varying in size from four millionths to four hundred-thousandths of an inch. This material makes cleaning ferromanganese blast-furnace gas vastly different from the cleaning of basic blast-furnace gas.

A method found satisfactory for cleaning fumes used a spray tower which cooled the gases from 700 to 350 degrees Fahrenheit by evaporating water in the tower. The dust in the fumes was collected and formed into "briquettes" which could be stored in open areas without creating air-pollution problems. The process was found satisfactory in a pilot plant. Now a plant has been designed to clean 135,000 cubic feet of ferromanganese blast-furnace gas a minute.

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Question Box

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DENDROLOGY

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How do crossword puzzle charts aid scientists in identifying badly mutilated bodies? p. 152.

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Photographs: p. 147, American Museum of Natural History; p. 149, University of Wisconsin; p. 151, Ohio State University.

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GENERAL SCIENCE

Truman Sees STS Group

President tells winners that they face a peaceful world over the next century and that it will be their turn some day to make that peaceful world operate.

See Front Cover

➤ PRESIDENT TRUMAN predicted peace in the world during the next 100 years when he received the winners of the Eleventh Annual Science Talent Search.

Text of Remarks

Following is the text of Mr. Truman's remarks to the high school seniors during their visit with him in the Rose Garden of the White House:

I want to congratulate these young people on being the prizewinners in this great undertaking they are going through. The country needs them, and it is going to need them worse in the coming generation than it needs them now. And the more important science becomes, the more necessary it is to have people who know how to take advantage of the opportunity.

I think you young people are faced with the greatest age in history. I am an optimist, and I rather think we are going to have a peaceful world over the next century, and it will be your turn some day to make that world operate. And I am more than happy to see that you are preparing yourselves for that purpose.

I am glad you are here. I hope you will enjoy your visit and that you will learn a lot about the United States and its government and its relations with the other countries in the world, which is most important for you to know.

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BIOLOGY

Better Lake Swimming

➤ SMALL LAKES may soon be made more pleasant for summer swimming through the use of a chemical that controls the bloom of blue-green algae. These algae are responsible for many of the unpleasant effects of heavy summer growth in lakes.

Extremely small doses of the chemical, which is 2,3-dichloronaphtho-quinone, will kill the bloom-producing algae, but leave other plant growth in the lake untouched. The compound was found by University of Wisconsin botanists Dr. Folke Skoog, George Fitzgerald and Gerald C. Gerloff when they tested more than 300 substances looking for a substitute for copper sulfate, now commonly used as a lake algaecide. They will report their results next July in the journal, SEWAGE AND INDUSTRIAL WASTES.

The chemical is apparently harmless to fish and other organisms in the water. Additional tests, however, must be made to determine its effect on fish and aquatic plants after long exposure. Unlike copper sulfate, the quinone chemical will not form a permanent toxic deposit in the bottom mud of a lake.

The search for a selective algae killer became possible after methods for culturing blue-green algae species in the laboratory had been worked out.

To learn the algae-killing qualities of the chemical under field conditions, the scientists carried out several initial experiments in lakes near Madison.

Further tests will also be made to find the dosage, time, frequency and manner for the most effective treatment of lakes. The research was financed by the Wisconsin Alumni Research Foundation and the National Institutes of Health.

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ALGAE-FREE WATER — Gerald Gerloff (left) and George Fitzgerald of the University of Wisconsin botany department inspect water samples from two lagoons of Lake Waubesa, near Madison, Wis., the first of which was treated with the new algicide for 48 hours and the second of which remained untreated.

METEOROLOGY

Weather Bureau Service Not Adequate for Jets

➤ THE U. S. Weather Bureau is not now equipped to give adequate service to pilots flying in a jet age.

Out-of-date and insufficient equipment handicaps the Bureau in performing the job of telling jet pilots about weather conditions at the 40,000-foot levels where they travel. Funds have not been forthcoming from Congress to replace the old equipment.

The U. S. Air Force's Air Weather Service is farther along in the job, but only because it has an easier time getting the appropriations from Congress.

Commercial jet transports are not expected to start operating in the United for another four or five years. If more and better equipment is not provided so the Weather Bureau can find out what is going on at 40,000 feet and up, the Bureau may not be ready when the airlines are.

"On clear days," one Weather Bureau official told SCIENCE SERVICE, "we can do a good job. But the minute clouds cover the skies, we are handicapped."

He explained that the speed of winds at 40,000 feet, a piece of information vital to jet pilots, is now usually estimated by watching a balloon with the naked eye. When clouds roll by, he went on, the observers now have to depend on a few out-dated radar sets, left over from World War II.

If the wind is going too fast, these are not adequate because the balloons on which the radar sets are trained blow out of range before they can get up high enough.

Science News Letter, March 8, 1952

INVENTION

Fire Protection System Draws off Dangerous Fumes

➤ DANGEROUS FUMES from a fire sometimes kill more people than the fire itself. This is the basis for the invention of a new method to draw off the fumes, thus preventing them from spreading from the fire through all parts of large buildings.

The inventors, James Dunlop, Camp Gaw, N. J., and Edwin F. Durang, West Orange, N. J. received patent 2,586,797 for their invention. Half rights have been assigned to the Westinghouse Electric Corporation, East Pittsburgh, Pa., and the other half to the Otis Elevator Company, New York.

The invention consists of a series of ducts, placed so they will catch fumes traveling through openings, such as doorways, stairwells, or elevator shafts. Exhaust fans eject the fumes into the open air.

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● RADIO

Saturday, March 15, 1952, 3:15-3:30 p.m. EST

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Mr. J. J. Demuth, president of the American Society of Tool Engineers and chief of the Tool, Dye, Jig, and Fixtures section, National Production Authority, on loan from Ehrhardt Tool and Machine Co., St. Louis, discusses "The Know-How of Production."

TECHNOLOGY

Concrete Durability Hurt By Penetration of Water

► CONCRETE WHICH is to be used in structures situated in water must be guarded against volume change and water seepage, L. H. Tuthill of the Bureau of Reclamation in Denver, Colo., reported to delegates attending the American Concrete Institute in Cincinnati.

Mr. Tuthill said controlling those two things meant the concrete would be more durable.

Byram W. Steele of Miami, Fla., formerly a concrete specialist with the Corps of Engineers, said concrete durability must be thought of in terms of individual structures.

"In many cases the concrete is good enough," he said. "To have spent more time and money making better concrete would have been economic waste."

However, he pointed out that concrete often is not good enough when used in structures situated in water. Within a few years, many structures show serious signs of deterioration because water finds its way into, and through, the concrete in many places.

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METEOROLOGY

March Will Be Wet In Most of Nation

► THE WEATHER will be colder than usual in the month of March over the western half of the nation, but about the same as usual in the East. This is the prediction of the U. S. Weather Bureau's Extended Forecast Section.

Exceptions to this prediction are the Gulf of Mexico coastal regions and the Great Lakes area. They can expect a warmer March than usual.

Most of the nation will have a rainy or snowy March, depending on the location. However, the Pacific Northwest will have less precipitation than usual, while the Great Lakes and Middle Atlantic states and the far Southwest can expect less than normal precipitation.

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CHEMISTRY

Fresh Water from Ocean

Plastics in sheet or membrane form, combined with electric power, now used to dissociate sodium chloride so it can be removed from sea water.

► FRESH, DRINKABLE water from brackish sea water is a realizable dream for the near future through the use of ion exchange films or membranes and the application of differences in electrical potentials.

Whether the costs of such operation can be reduced to a level where the process can be used to supplement existing water supplies for cities is a matter for future development.

Several organizations are working on this problem, among them Rohm and Haas Co. in Philadelphia, Ionics, Inc., of Cambridge, Mass., Dow Chemical Co. at Midland, Mich., and the University of California at Los Angeles.

Already there are ion exchange resins in granule form that can be used to desalt water and perform dozens of other extractions of chemical substances from liquids. But the quantities handled are small and the costs high.

The new developments consist of use of the plastics or resins in sheet or membrane form, with electric power to aid the process of dissociating the sodium chloride, which is salt, in such a way that it can be removed.

The federal Reclamation Service in Washington has been urging Congress to make $25,000,000 available for developmental desalting water research, and such legislative request has been cut to $2,000,000 in hearings held recently. If such appropriations were made, experiments with some of the ion exchange methods would result.

The latent energy of salt, which is the minimum of energy necessary to separate its chemical components, is three kilowatt hours per thousand gallons of sea water. A possible figure of 10 to 20 cents per thousand gallons was given by the Cambridge group of Ionics division of the American Research and Development Corporation, closely associated with Harvard and Massachusetts Institute of Technology staff members. This is a reasonable figure for the future with very cheap electrical power available, yet it is a tenth of the best possible costs worked out by the most promising distillation methods.

Since even water from a river is not obtained without cost, these possible costs of desalted water bring the process to within reach of the cost of reclamation and industrial water which often costs as much as the estimated ion exchange water costs.

To obtain large output of water by the ion exchange method might require an excessive investment in equipment. The slower the process the less electrical energy is used, yet it may be advantageous to waste electricity to reduce the number of expensive units installed.

Details of the exact methods used are being kept secret due to filing of patents. The chemical nature of the resins used is also unannounced. If the process seems vital to defense activities, it may be kept secret by government order.

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TECHNOLOGY

57 Varieties of U. S. License Tags Are Problem

► IMPROVEMENT IN license-plate protection and illumination is blocked by a frustrating combination of different license lengths and different heights, the Automobile Manufacturers Association in Detroit declares.

The association has counted a conglomeration of 57 United States varieties plus nine Canadian varieties, giving a total of 66 different sizes.

Until some standards have been set, license receptacles cannot be incorporated into auto design as fenders have been incorporated.

At present, license sizes can fall within certain specified limits, but no standard license size is prescribed. That permits a combination of the two dimensions in many ways. As a result, they have been combined "in almost every possible way within the range permitted by the law of mathematics."

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ENGINEERING

Reversed Washer Used In Air-Cooling System

► A REVERSED washer has been found a practical air-conditioning unit where water shortages make it desirable to consume as little water as possible in cooling systems.

The reversed washer is merely a standard air washer which, instead of cooling air, cools water and discharges warm air.

A system using such a device has been designed and installed in a six-story New York bank building. It has enough capacity to handle 400 tons of Freon. The system was devised by the Guy B. Panero firm of engineers.

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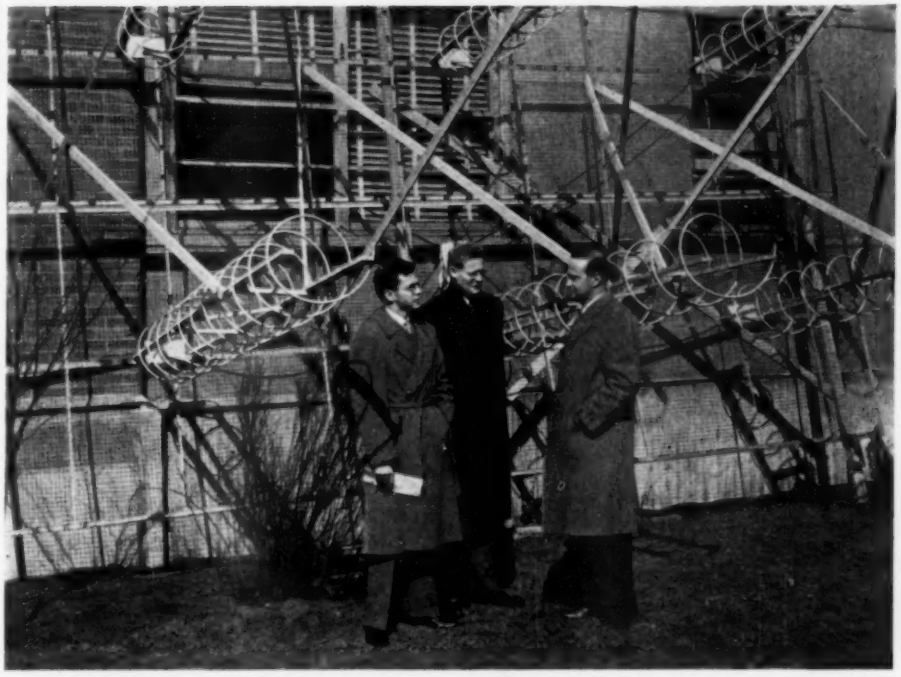

GIANT RADIO TELESCOPE—The antenna of the Ohio State University radio telescope in Columbus will consist of eight sections such as this one, mounted side by side. With it astronomers will seek out the noisy radio stars that hiss at the earth. (See SNL, March 1, p. 135.)

ELECTRONICS

Predict Fading for TV

Summertime will bring more interruptions to television viewing screens carrying transcontinental programs. Shifting air signals blamed for detouring video signals.

➤ TRANSCONTINENTAL TELEVISION network programs are likely to fade more often as the summer wears on, leaving blank television screens before video viewers' eyes.

Some fading already has been reported by television networks who blame changing temperatures and shifting air densities for detouring the television signal off its charted course. Sometimes the video signal has been lost as long as 15 seconds. But the sound, which is sent over different facilities, is not affected.

Opened last fall, the television relaying system is shared by all companies who broadcast to or from the West. It uses a microwave signal which is relayed across mountains and prairies by 107 repeater stations spaced from about 20 to 50 miles apart, depending upon the terrain.

The nearness of the stations to each other gives line-of-sight transmission of the television signal, necessary because of the extremely short wavelengths used in video broadcasting. Signals leaving one repeater station are beamed directly at another. Under ordinary conditions they are received without trouble.

However, changes in temperatures produce differences in air densities between relaying stations. The different densities offer different paths of resistance to the microwave carrier. By taking the path of least resistance, the video signal may stray off course and miss its destination completely.

NBC television engineer J. M. Weaver said fading probably would get worse during the summer. Hot days followed by cool nights are expected to produce much of the disturbance, he said.

Actually the microwave method of transmitting television pictures is superior in picture quality to the method used in coaxial cable transmission. One television engineer said sometimes the picture arrived in Washington by microwave from the West coast with more detail than from New York by coaxial cable. The difference in picture quality is due to a broader frequency spectrum which can be used in microwave transmission.

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WILDLIFE

Coyote Scalps In Deep Freeze

➤ HUNTERS IN the Tario, Mo., area are reported to have a new use for deep freezers: saving the scalps of coyotes until March 18, when the new, $30 bounty goes into effect.

Conservation agent Bill Noland, Atchison and Holt counties, Mo., also reports that more coyotes are being hunted from planes, possibly to increase the number of scalps in deep freeze lockers.

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DENDROLOGY

Discover Tropical Wood Half Aluminum Strength

➤ DISCOVERY OF a tropical wood five times stronger than white oak and nearly half as strong as aluminum was reported by Frederick F. Wangaard, associate professor of forest products at Yale School of Forestry in New Haven, Conn.

The tropical hardwood comes from a medium-sized tree known as Kaneelhart. It was uncovered during a search to find replacements for woods such as teak and oak now standard for various naval uses. Tests have shown it to be one of the strongest and heaviest woods in the world. Although having nearly half aluminum's strength, it weighs only a third as much as the metal.

The Kaneelhart tree, scientifically known as *Licaria cayennensis,* is a member of the Laurel family and a distant relative of the sassafras tree found in the eastern United States. The tropical hardwood is found in about 40 varieties in Central America and along the northern coast of South America.

Possible uses foreseen by Prof. Wangaard include hard-as-iron thresholds for doorways, for tool and utensil handles, in textile mill machinery and for turned-wood products of all kinds. The wood can be machined to a mirror-like finish.

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ELECTRONICS

Army Radio Equipment Shrunk to Tenth Size

➤ USE OF transistors, which are germanium crystal electronic devices that can replace conventional vacuum tubes, has allowed the Army Signal Corps to reduce one part of its radio-teletypewriter equipment from 100 to 10 pounds. The new equipment can also be operated on 1½ watts from dry batteries instead of 175 watts from a heavy mobile generator.

Instead of burning out after a relatively short period of use, like the familiar tubes such as in ordinary radio sets, the transistor has an estimated life of seven years of continuous use.

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MEDICINE

Bible Fruit Used as Medicine for Sick Babies

➤ FRUIT OF the carob tree, mentioned in the Bible and sometimes called St. John's bread, has been made into a medicine which is helping modern babies recover from diarrhea.

Babies given carob flour in water every four hours were "cured" in about one third the time it took babies treated in the same way but not getting the carob flour, Dr. Thomas R. Plowright of Fresno, Calif., found.

In his report to fellow physicians in the JOURNAL OF PEDIATRICS, he points out that this is only the second report in the United States on use of this material for infant diarrhea. But the Hindu population in and around Fresno have been using the sweetish, date-like fruit of the carob tree as a "home remedy" for diarrhea for years.

In Barcelona, Spain, during the Spanish Civil War an observant doctor noticed that the children of the poorer classes who ate the fruit of the carob tree had fewer diarrheal disturbances than children of the wealthier classes. This doctor made a "concoction" of the dried pulp of the roasted carob mixed with starch and used it for treatment of diarrhea.

This "concoction" was subsequently manufactured abroad under the name of Arobon and numerous reports of it have appeared in foreign medical journals. The material, called carob flour or Arobon, is also now available in the United States.

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PSYCHOLOGY

Stubborn Child Will Make Good

➤ WHEN JOHNNY, at the age of two, develops a stubborn streak, he can be very trying to his parents.

They may be even more upset by similar stubbornness when he reaches the age of 16 or 17. Stubbornness at these ages, however, is normal and shows the child has the capacity for making a good social adjustment eventually.

This reassurance to upset parents comes from Dr. Katharine M. Banham, associate professor of psychology at Duke University, Durham, N. C. In a report in MENTAL HYGIENE (Jan.), published by the National Association for Mental Health, Dr. Banham also points out that a child's stubbornness does not last forever.

"Obstinate contrariness is likely to change to cooperative behavior when the child finds something he can do that will bring satisfaction to him while complying with the wishes of those for whom he cares," she states.

Frequently stubbornness grows out of a child's wish to please those he loves. Sometimes a child is stubborn because he is frightened. He wants to please others so much that he fears to act lest his behavior should estrange him from those he loves. Such a child can become cooperative and happy if he is given a chance to show his affection in an acceptable way, or if he is shown how to act in a way which will satisfy his own needs and yet not offend others.

Dr. Banham compares the two-year-old who has just learned to walk easily with the adolescent who is almost an adult. Both have increased choices of action open to them and both are torn between the need to conform and remain dependent on others and the need to become independent. These factors may explain the behavior of the cranky, rebellious child and of the adolescent youth who "will not listen to reason," Dr. Banham believes. Often, she thinks, the particularly stubborn child is not indifferent to the wishes of others, but is especially sociable and eager to please.

Science News Letter, March 8, 1952

MEDICINE

X-Ray Photos Identify Unrecognizable Bodies

➤ BEFORE AND after death X-ray pictures and crossword puzzle charts are among the aids modern medical scientists can use for identifying dead bodies so charred or mutilated they cannot be identified by more ordinary means.

These two methods played key parts in successful identification of 116 of 119 persons burned to death when the steamship "Noronic" was gutted at her pier in Toronto, Can., on Sept. 17, 1949, three members of the medical identification committee for the disaster report in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Feb. 23). They are Drs. T. C. Brown, R. J. Delaney, and W. L. Robinson of Toronto.

The crossword puzzle charts had horizontal squares representing persons known to be "Noronic" victims. Vertical squares represented "Noronic" bodies. Squares were blackened to show pairs that did not match. As more information was obtained, more squares could be blackened and the charts continued to show the investigators where still more information was needed for positive identification.

In one case, the chart showed all other bodies had been ruled out as not being a Mr. K., but the identification was still not positive. The investigating committee then pressed for further information from relatives of the missing man and discovered he had been fingerprinted during the war. Positive identification was finally made through the fingerprints.

In only 20 bodies was there enough skin remaining on the fingers to take fingerprints and in these, ordinary methods could not be used. The fingers were therefore sent to the FBI in Washington where special methods were used to get the patterns.

Science News Letter, March 8, 1952

IN SCIENCE

NATURAL RESOURCES

Find Primary Uranium Ores in New Jersey

➤ PRIMARY URANIUM ores have been discovered almost within sight of the Empire State Building, U. S. Department of Interior geologists report.

The primary uranium minerals are located in Franklin limestone in Warren County, New Jersey. Chief significance of the new find is that it indicates the presence of primary uranium ores in the Appalachians. Chances are that other deposits will be found, but prospectors must look for them.

"We would not want to release further information about these deposits until we are sure that our first interpretation of the geological data is valid," Dr. A. P. Butler, Jr., told SCIENCE SERVICE. Dr. Butler was one of the four scientists making the report to the Geological Society of Washington.

Dr. Butler pointed out that the New Jersey deposits correspond to a dozen or so other deposits found in Mexico, Utah, Colorado, Montana and Idaho, all of which are considered among the "most promising" of the showings in the search to unearth more of the vital A-bomb raw material within the United States.

The single-line description of the uranium deposits states, "Primary uranium minerals occur in pyrometasomatic deposits in the Franklin limestone in Warren County, New Jersey."

Drs. V. E. McKelvey, L. R. Page and R. P. Fisher were co-authors of the report, a summary of the distribution of uranium minerals in different kinds of geological environments within the United States.

Science News Letter, March 8, 1952

INVENTION

New Pregnancy Test Chemical, Not Biological

➤ A NEW method of determining whether a woman is pregnant, which is chemical rather than biological in operation and which can be utilized during a patient's visit to the doctor, has been developed. Garwood C. Richardson, Chicago, and Gustav W. Rapp, Glen Ellyn, Ill., have assigned their patent 2,587,221 to the Chicago Endocrine Research Company, Chicago.

The test involves separating progesterone and other interfering steroid substances from estrone in laboratory samples taken from the patient. In this manner, estrone, a hormone associated with pregnancy, can be identified.

Science News Letter, March 8, 1952

E FIELDS

DENTISTRY

Plastic Tooth Fillings May Replace Porcelain

➤ Plastics may some day be used for many of the teeth fillings now made with synthetic porcelain or silicate cements, dentists have indicated.

Self-curing resins, plastics that harden at room temperature, promise a "new and exciting chapter" in dentistry, the JOURNAL OF THE AMERICAN DENTAL ASSOCIATION (March) stated, commenting editorially on eight scientific reports on the new material.

The plastics are acrylics and tests show that they apparently do not dissolve in the fluids of the mouth. In this respect, they have "great superiority over silicate cements," Drs. Herbert D. Coy, David M. Bear and Seymour J. Kreshover of the Medical College of Virginia report.

They based their report on a study of 300 patients with an average of two plastic fillings each. Careful observation over a period of several years is needed, however, three dental scientists at the National Bureau of Standards warn, before final conclusions can be made concerning the self-curing resins. They are Dr. George C. Paffenbarger, Comdr. Robert B. Wolcott and Dr. Robert J. Nelsen.

The resins should be used for repairing and relining dentures, U. S. Navy Capt. Frank E. Jeffreys of Newport, R. I., recommends. They can be made ready for use in five to 20 minutes, thus saving the patient from the embarrassment of being without dentures.

Science News Letter, March 8, 1952

MEDICINE

Radioactive Gold Wash For Cancer Distress Relief

➤ A RADIOACTIVE gold wash will relieve some of the distressing complications of advanced cancer, Drs. Edward Kent and Campbell Moses of the University of Pittsburgh reported to the American Cancer Society.

The gold wash is not a cure for cancer, however.

The Pittsburgh doctors have used it for patients whose cancers have spread to the pleura, or sac encasing the lungs. The pleura contains a fluid in which the lungs may expand and contract without rubbing against surrounding tissues. Cells from cancers of the lung and other organs frequently lodge on the pleura and start scores of new pinhead-size tumors there.

When the pleura becomes pimpled with the new cancers, enormous amounts of fluid may form, compressing the lungs, and this has to be withdrawn every week or so to enable the patient to get enough air into his lungs.

During the last year, Drs. Moses and Kent have injected semi-fluid radioactive gold into the pleural fluid and let it slosh around over the tiny tumors.

The gold emits very short but powerful rays which kill dividing cells. It kills enough of the fast-growing tumor cells to arrest the excessive accumulation of fluid.

The Pittsburgh technique, perfected on more than 40 patients with various kinds of cancer, has become so good that on the last ten patients it has not failed to relieve discomfort and stop the fluid from forming.

The same treatment is being used on cases of cancer of the ovary where the inner abdominal cavity becomes covered with tiny cancers. After being bathed in a radioactive gold wash, some of the abdominal cancers ceased to grow and fluid accumulation stopped. So far, however, abdominal conditions have not been treated as satisfactorily as those of the pleura.

An adaptation of the treatment is being applied to cancer of the urinary bladder.

Science News Letter, March 8, 1952

PSYCHIATRY

Anxiety or Chronic Fear Increases Stomach Acid

➤ ANXIETY OR chronic fear has just the opposite effect on the stomach that acute fear has. The secretion of hydrochloric acid in the gastric juices is increased, not reduced.

Better understanding of the disturbances in body functions that afflict neurotic people, ranging from nervous indigestion to stomach ulcers, may be gained from this discovery. The finding which applies to monkeys and dogs as well as man was reported by Dr. George F. Mahl of Yale University to a New York Academy of Sciences conference.

When you are scared in the presence of danger, your body becomes ready for action. Digestion and all other activities not essential to fight or flight stop. Gastric hydrochloric acid secretion is reduced. Heart action and breathing are quickened. Sugar and adrenalin are released into the blood.

Students under the anxious strain of final examinations showed an opposite effect on digestion, Dr. Mahl found. They had a significant rise in hydrochloric acid secretion. The secretion was also higher in a group of anxious psychoneurotic patients than in non-patients who were not anxious.

A group of monkeys under chronic fear showed similar increase in hydrochloric acid secretion. When chronic fear was induced in dogs, they did not show an increased flow of hydrochloric acid for the first five hours; after that it went up.

Science News Letter, March 8, 1952

MEDICINE

No Plague or Cholera Epidemic in Korea

➤ THERE IS no epidemic of either plague or cholera in Korea at present, according to Public Health officials in Washington.

Commenting on reports received in the U. S. that Communist propaganda is claiming that UN planes are spreading these diseases in North Korea, the officials said that the home of cholera is in India and the disease is present only in India at the present time. Plague exists in northern Asia and may be present in Korea, but there is no epidemic of this disease there either.

Plague is a disease ordinarily spread by rodents—rats, squirrels, chipmunks, and so on. It is passed on from one animal to another by the bite of a flea. Occasionally the flea will bite a human and spread the disease to man. Sometimes a patient will get the plague in a lung and then can spread the disease by coughing. He can only give it to persons in close contact with him —relatives, attendants, and priests giving the last rites have contracted pneumonic plague in this way. But the more common form is not this plague of the lungs, pneumonic plague, but bubonic plague spread by rats.

Cholera is spread like typhoid. It is contracted by drinking water or eating food contaminated by the body wastes of cholera patients, either directly by faulty sanitary conditions or indirectly by flies that light on food after lighting on filth.

Science News Letter, March 8, 1952

NAVIGATION

Navigation Aid Developed To Cut Ocean Tragedies

➤ A NEW device now helps navigators keep track of nearby ships and thus prevent possible ocean tragedies.

Known as the reflection plotter, the device is an illuminated plastic screen which fits over the navigator's radar scope. When a ship is picked up by the radar set, the navigator marks the plastic screen with a grease pencil to show the point where the ship is situated.

By watching the ship progress across the radar screen, and by comparing its position to the marked spot on the reflection plotter, the navigator can see at a glance the direction which the ship is taking, its speed, and its relative position to his own vessel.

The navigator then can calculate whether there is danger that his ship may collide with others in the same area. The new device was developed by the Raytheon Manufacturing Co.

At present, it often is necessary for the navigator to transcribe radar data on nearby ships into writing. Then he must take it to the chart-room for plotting. That is a slow process and involves possible errors.

Science News Letter, March 8, 1952

GENERAL SCIENCE

Science for Defense

"Selective Emphasis" must govern decisions on research and development programs. Freedom and encouragement for creative talent essential to new ideas.

By WALTER G. WHITMAN

Chairman, Research and Development Board, Department of Defense

Address delivered at the Awards Banquet of the Science Talent Institute in Washington, D. C., March 3.

▶ IT IS a real pleasure to have the opportunity of congratulating you—the winners in the annual Science Talent Search. As I looked at the impressive exhibits of your work last Friday evening I was thrilled by the realization that a new phalanx of scientists is advancing each year through the high schools and into the universities. Your personal accomplishments at this early stage are harbingers of great deeds ahead.

The opportunity is unusually significant to me because only last year I was a college professor whose primary interest was the undergraduate education of scientists and engineers. And to me the greatest challenge was to further strengthen and improve freshman education, working with young people in their first year of university life. Frankly, I envy those professors who will next fall be your teachers.

New Applied Science Problem

Many of you will, after graduation, enter careers in research and development. You will never be quite satisfied, because the good research man is never satisfied, but I believe that you will find much happiness in doing the things which you most want to do, and being paid for it to boot. Some of you will become pure scientists, absorbed in discovering something new. Others, and probably the greater number, will become engineers and applied scientists, ever searching to utilize science more effectively for the good of society.

I want to talk tonight to you and to your elders here about a vast new problem in the realm of applied science which has been forced upon us by the compulsions of international tension.

When I was a boy, research belonged only to the universities. Industry and business were not concerned with these preoccupations of the long-haired scientist.

After World War I, industry became aware of the tremendous potentialities of technology for practical purposes and it built up and supported strong and vigorous industrial laboratories. These industrial laboratories have brought forth new processes and products, greatly enriching our national health and standards of living.

Today much of our wealth of technological talent and resources is, perforce, being channeled extensively into the defense effort. Government funds are now supporting some two-thirds of the total research and development of the country. While the figures are not as reliable as we would like, it appears that well over 40% of the professional men who are engaged in research and development in the United States are on Defense Department problems. Nearly half of the total who are on Defense Department work are employed in industry, working on government contracts. Our figures indicate that over a third of the total industrial research and development and over one-third of the university research is on Defense contract.

Implications Revolutionary

The recent emergence of Defense as the biggest single factor in the country's research and development has revolutionary implications.

The revolution is perhaps most keenly felt in the Department of Defense itself, which faces problems and responsibilities on a scale which was unthought of ten years ago.

It is well to remember that the research which private industry conducts is relatively mature, and that its policies and management have been developed over some 35 years, under highly competitive conditions, with many failures and new beginnings. Industrial research policies are not standardized—they vary from company to company, both with the type of industry and the people who manage it. Yet today a single government agency—the Department of Defense—is called upon to administer a technological program which is bigger than the combined programs of all research and development enterprises in the country only a decade ago. It is easy to see that the very magnitude of the task presents many new problems. But it is also evident that we can and must learn from the experiences of research direction in universities and industry, often so dearly acquired, if we are to provide competent direction and leadership for what many of us believe to be the most vital element to our national defense.

I want to discuss two factors which are essential to such direction and leadership.

The first problem of research direction is the decision as to what fields should be tilled. Businessmen can point sadly to expensive research projects which successfully developed what they were intended to develop but which only produced red ink on the balance sheet because nobody wanted the results after they were achieved. After a number of such failures, it became evident to the research directors that an intelligent and objective appraisal of the possible value of a proposed project should be conducted before investing much money and talent in the technological effort. The same necessity faces defense research. A new idea for a weapon may highly ingenious, but an enlightened analysis of its potential worth is essential before extensive support of its development is justifiable.

It is to this field of evaluation that the efforts of skilled and imaginative but objective teams like the Weapons System Evaluation Group and similar groups of the three services can contribute tremendously. Both imagination and cool objectivity are required to foresee the war-time situations which may face us and the kinds of equipment and systems which might best accomplish our objectives. Such analyses call for a combination of military and civilian talents and experience of the highest order. The conclusions which they reach, when combined with estimates of the probability of technical success for new developments, can indicate the most promising lines for research.

This problem of deciding which efforts should be supported and to what degree can be characterized by the term "Selective Emphasis." We cannot hope to do everything which is suggested, even though it appears to be technically attainable. Such a policy would so spread our resources of talent and money that the vitality of the most important programs would be sapped by the dilution of trying to do too many things. It is perhaps only to be expected that our present program, which has rapidly expanded over the past two years, particularly challenges the "Selective Emphasis" approach today.

Challenge to Management

I have spoken about the problem of deciding which field of endeavor should receive greatest encouragement and support. But there is an equally important—perhaps an even more important—policy problem—one that concerns the individual laboratory, the individual project group and the individual scientist and engineer. We hear so much about the achievements of big organizations that it is easy to be lulled into the illusion that the organization's top men, with their impressive titles, generate the bright ideas and the resourcefulness to push them to successful fruition. The cold fact is that things don't work that way. Bright ideas can spring up anywhere down the line, and some of the best come from teams and individuals at the working levels of experiment and design.

The challenge to higher management is to establish an environment which will en-

courage creativity at the working level. The history of an idea through research and development is scarred by countless discouragements and frustrations—by false leads and mistakes—which can be surmounted only by persistence, resourcefulness and the confidence that the goal can be achieved. These are qualities of the spirit as well as of the mind. And the spirit responds sensitively to the attitudes and actions of management.

So the second major problem which I want to discuss is that of creating and maintaining high morale at the working levels of research and development. The brains, the vision, the resourcefulness and the devotion of young scientists and engineers are our potential strength, which can flourish or be blighted by the understanding or lack of it displayed by management. True leadership calls for a sympathetic appreciation of the importance of the creative individual and it demands the talent and tact to see that his efforts are encouraged in directions which offer the greatest rewards if successful. Such leadership recognizes that many ideas will prove to be impracticable or unprofitable, it encourages initiative, and it tempers its harsh decisions when a project must be cancelled by a thoughtful explanation of the reasons for cancelling and constructive suggestions for future work.

Application of Principles

As we try to apply these principles in the framework of a vast Defense research and development program it is at once evident that two characteristics loom up which are foreign to academic and industrial enterprises. The first is government, with its policies and procedures and the general atmosphere which is commonly described as "bureaucracy," involving the controls developed by law and custom on expenditures of public money. The second is the military system, characterized by the chain-of-command concept which is so essential to assuring operational responsibility and authority in the conduct of war.

Superficially, these two elements—bureaucracy and the military system—may seem to present almost insuperable obstacles to a vigorous and effective technical program for better weapons and systems. Actually, they do present great problems, but I see no reason for discouragement. Government and the public have become aware of the vital significance of technology to national defense. The willingness of the executive to propose and of the Congress to support a strong budget for defense research and development proves this. And the military are not as conservatively wedded to tradition as many civilians believe. My own experience here over the last seven months has shown me that some of the ablest men in the country are in uniform, and I have been surprised to find a goodly sprinkling of younger officers who not only respect and comprehend science and engineering but who have personally participated in the joys and tribulations of research. The character of the military system is constantly changing, and will change ever more rapidly in the future because of the nation's needs for a strong defense establishment. It is my observation, both from my wartime experience in Washington and in my present post, that the work and the decisions of government are directed by individuals of character and devotion far more than is generally realized. The individual is important here, just as he is in private enterprise.

Selective Emphasis Governs

In closing, I shall suggest some tentative guide lines for this tremendous program of technology for national defense:

1. "Selective Emphasis" must govern the decisions when research and development programs reach a stake which calls for significant expenditures of money, resources and talent. Making the selection calls for cooperative judgment of the best military and civilian brains—both as to what sort of conditions our armed forces will encounter and the potentialities for developing equipment and methods to surmount them.

2. Freedom and encouragement for creative talent are essential to the birth and early growth of new ideas. By providing them, a wealth of new possibilities can be explored and the most promising ones subjected to critical appraisal as their development reaches the point where heavy investments would be needed for continuing them. Individual initiative is vital at all stages and at all levels. Directors of working groups, of laboratories, of departments and of top policy boards must ever strive to encourage and support creativity in those for whose work they are resposible.

For you young men and women with such high potentialities for careers in science, I feel a great elation. Your adult world will be different from our world. We find great satisfactions when we can feel that we have helped our world to become a better one for you. And I know that you, too, will taste the sweetest fruits of achievement as you know that your efforts have helped man a little further towards his high destiny.

Science News Letter, March 8, 1952

ASTRONOMY

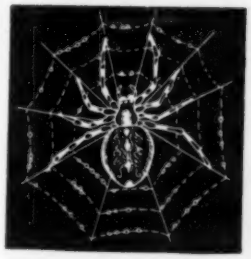
Exploding Star Discovered By Mexican Astronomer

➤ A BRIGHT star has blazed forth in the southern sky. It is in the constellation of Sagittarius the archer. The nova is of the seventh magnitude but too far south for most U. S. observers to spot.

The "new star" was located on Feb. 21 by Dr. G. Haro, director of Mexico's Tonanzintla Observatory. News of his discovery comes from Harvard College Observatory, Cambridge, Mass.

Science News Letter, March 8, 1952

Living Worlds Around Us



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NUTRITION

More Protein for Pre-School Children

➤ FEED THE toddlers, or pre-school children, plenty of protein if you want them to develop strong muscles and good posture.

This advice to parents can be gleaned from advice to medical students and interns given by Dr. Philip C. Jeans of the State University of Iowa's College of Medicine.

Children with less than the best muscle mass are far more common than those with the normal amount, he says. More often than not, such children have average weight for their height and age. They have been getting plenty of calories but not enough of the calories come from muscle-building protein foods, such as meat, eggs, fish, milk and the high protein vegetables.

The muscle mass of such children, Dr. Jeans reports, has been increased, in special experiments, by as much as 25% without increasing the child's body weight. This has been done by feeding more protein, which substitutes muscle for fat.

In MD, a medical journal for residents, interns and medical students, Dr. Jeans says:

"Usually babies are well fed and when they first stand and walk they have good posture. Between two and six years of age growth in height slows, but normally most of the growth in this period is of muscles.

"Nevertheless, it is uncommon to find a four-year-old with good posture for the reason that the diet has been deficient in protein and muscles have not had the expected normal increase.

"Milk is the most important source of protein at this age and very commonly the milk intake is inadequate. Many mothers are content if their children of pre-school age take one pint of milk daily. Such a diet is almost certain to be low in protein."

Science News Letter, March 8, 1952

A History of the Theories of Aether and Electricity

by Sir Edmund Whittaker

Sir Edmund Whittaker, FRS, Professor Emeritus of Mathematics in the University of Edinburgh, presents a historical exposition of the 'classical' theories of the aether and electricity from the early Greek surmises up to the discoveries associated with such scientists as Ohm, Faraday, Maxwell and Lorentz. $12.00

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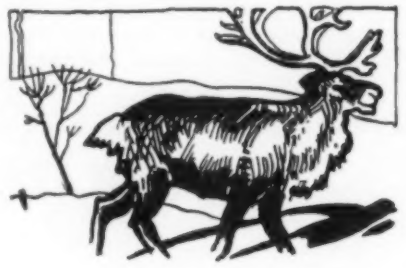
WILDLIFE

NATURE RAMBLINGS



Untamable Cattle

➤ WHEN THE first human migrants came into this continent by way of Alaska, they brought with them only one domestic animal, the dog.

They were hunting tribes, and had no use for other animals except to kill and eat them. Indeed, it now seems probable that these first comers made their memorable trip at so early a date that no one anywhere on earth had learned how to tame any animal other than the dog.

But whereas Old-World peoples domesticated horses, cattle, sheep, goats, camels, elephants, reindeer, chickens, ducks, geese, pigeons and a whole Noah's Ark of other beasts and birds, the natives of the Americas had almost nothing in the way of tamed work or food animals.

In the Andes they had two representatives of the camel family, the llama and the alpaca. In Middle America they had the turkey. Elsewhere Indians had domesticated the mallard duck and the cavy or guinea pig. And that is about the whole list.

Lack of ability on the part of the Indians cannot be argued as a reason for this small showing. They developed several civilizations that reached a level comparable with that of the ancient Egyptians and Babylonians. They had considerable skill as astronomers and mathematicians. They had done notably well in domesticating native plants, with corn, potatoes, tobacco, peanuts, vanilla, red peppers and a long list of others to their credit.

They took to European domestic animals readily enough when the white man introduced them—too readily in the case of some of the white man's horses. Their failures to tame any animals must be sought elsewhere than in lack of talent or patience for the job.

It seems not at all unlikely that the Indians tamed so few animals because most of the animals on this continent just would not be tamed. The bison, only American member of the ox tribe, is at once one of the biggest, one of the stupidest and one of the most truculent of all cattle.

The pronghorn, nearest thing we have to an antelope, is just as untamable as its Asiatic and African "opposite numbers." Although horses had originated and evolved on this continent, they had become extinct here and the Indians saw their first horses when Spanish cavalry made its terrifying appearance. Deer and elk are alike untamable in Old World and New. The Indian just played in hard luck, so far as animals were concerned.

An interesting case is that of the Asiatic reindeer and its near relative, the North American caribou. Reindeer are rather unruly, but they have been successfully domesticated. But the caribou is unrulier still, and is enough bigger than reindeer to make him impossible to "wrangle." So the only way you can use him is to shoot him.

Science News Letter, March 8, 1952

PHYSICS

Cyclotron for Japan

➤ THE JAPANESE are replacing the cyclotron which was destroyed by American troops early in the occupation, it has been learned.

The old cyclotron which was completed before the war was a duplicate of the one then under construction at the University of California. It is a research instrument, used to "smash" atoms with electrons.

This cyclotron, at the Institute of Physical and Chemical Research in Tokyo, was destroyed by American troops whose commanding officer was under the impression that it could be used to help make A-bombs. American scientists at the time expressed indignation at the destruction of the very expensive research instrument. A move was started to have it replaced, either with government or by private funds.

Both plans were dropped, however. The State Department unofficially pointed out that contribution of a new cyclotron to the Japanese might be made use of for propaganda by the Russians. They would, it was believed, tell the Asians that the Americans were bringing atom weapons to their territory.

At a recent meeting of the council of the Federation of American Scientists, the question of whether Americans should, either privately or through the government, pay for the new cyclotron was dropped.

Approval for replacing the cyclotron was given some time ago by the American occupation authorities. However, it is only recently that the Japanese have been able to provide the money for the new cyclotron.

Science News Letter, March 8, 1952

VETERINARY MEDICINE

"Kill-And-Bury" Campaign

Dread foot and mouth cattle disease strikes in Canada. Border is closed to meat and cattle imports to prevent spread of epidemic in U. S.

➤ THIS TIME it is a "kill-and-bury" fight against a dread cattle disease north of the border. Foot and mouth disease has broken out in the frigid plains of the Canadian province of Saskatchewan.

Not since this disease appeared over a large area in Mexico in late 1946 has there been an invasion so close to the United States. The border is closed to imports of cattle and meat from Canada. Dr. M. S. Shahan, a veteran foot and mouth specialist of the U. S. Bureau of Animal Industry, is in Canada to assay the situation and give informal help. Dr. Shahan led the fight against aftosa, as the Mexicans call the disease, in the Mexican outbreak.

Whereas the United States has spent $100,000,000 cooperatively with Mexico in bringing the cattle plague there under control, it is not expected that such aid will be needed by Canada.

The Canadians, some of whose experts were in Mexico in the early days of that outbreak, are well equipped to fight the outbreak. A slaughter-and-eradicate policy will be followed.

Ground frozen six to eight feet deep, with many subsidiary roads made impassable with heavy snow, will hamper the eradication campaign in the 2,900 square miles now under quarantine.

Europe this past year has had the greatest increase in the foot and mouth disease since 1938-39. Laboratories engaged in research upon the disease in Denmark, Holland and Great Britain have been taxed to their limits with routine testing. U. S. cooperation has been extended to these laboratories because the disease is considered too dangerous even to study within the borders of the United States.

In Europe and many other parts of the world the disease is endemic and always present, kept in check by vaccinations of cattle. The United States, Australia, New Zealand, Central America and the West Indies are the only large areas free from this cattle ill.

While north of the Canadian border there is trouble, the experts are encouraged by the progress south of the Mexican border. There is hope that the aftosa there is "plum licked," as one expert expressed it. The Mexican invasion covered some 200,000 square miles at its greatest extent, but for some time now there have been no fresh cases. Vaccine was used until about August 1950 when it was stopped so that lingering infections would show up. The disease seems to be eradicated and the U. S. veterinary staff now in Mexico has been cut to 40.

Foot and mouth disease is a devilish disease for the Devil himself, with his legendary cloven hoofs, would be susceptible to it. Only the cloven-hoofed animals contract it. Horses are not affected, for instance, and it does not infect man.

Because cattle raising and dairying are multibillion dollar industries and the American people like their steaks and milk, any outbreak of this cattle plague is of great concern to American agriculture and industry.

Science News Letter, March 8, 1952

PSYCHIATRY

Don't Coddle Neurotics

➤ STOP CODDLING neurotics.

Neuroses could be cured more quickly and more could be done to prevent such emotional illnesses by teaching people to take the consequences of what they do instead of letting them blame their troubles on something done to them, such as a rebuff or hurt in early childhood.

This view of neurotic diseases and their treatment, which is the opposite of much present-day thinking and teaching, was presented by Dr. O. H. Mowrer of the University of Illinois at Urbana, Ill., at a New York Academy of Sciences conference.

His theory will not be popular with the neurotics, Dr. Mowrer admits. But, he said, it "will fit facts and produce results."

Neurosis, he said, is a "perversion of the problem-solving function" in learning, rather than a matter of learning by wrong conditioning.

The neurotic, Dr. Mowrer said, is "a person who in one or more important areas of his life has learned to deal with conflicts between desires and the social consequences of gratifying them by means of evasion and duplicity."

"This strategy," Dr. Mowrer explained, "drives him into a downward spiral of personal inconsistency, self-condemnation and disorganization."

The neurotic, he said, must come to see his troubles as largely the result of what he himself has done and is doing, instead of as a consequence of what has been done to him. He must see himself as needing to grow up instead of "having his fears and moral scruples scaled down."

Confusion with respect to sex, the tendency toward homosexuality, unmanliness or unwomanliness, is usually secondary to character defects, Dr. Mowrer stated.

A person need not become neurotic through trying to conform to social values, nor need he give up creativity and originality. On this point Dr. Mowrer said the following:

"One can be as much of a non-conformist or innovator as one wishes and remain mentally healthy, provided one does not 'cheat,' that is, does not try to have the advantages of conformity and of non-conformity simultaneously."

Treatment of the neurotic, he said, should be seen as "adding something to personality and character," not taking some excess of feeling away.

Science News Letter, March 8, 1952

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Books of the Week

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THE ADVANCEMENT OF SCIENCE: Vol. VIII, No. 31—*British Association for the Advancement of Science*, 99 p., illus., paper, 6 shillings. Contains a report of the Edinburgh meeting as well as articles on such topics as artificial rain production, social consequences of the aeroplane and fertilizer trends.

AIR FLOW THROUGH CONVENTIONAL WINDOW OPENINGS—Theo R. Holleman—*Texas Engineering Experiment Station*, 45 p., illus., paper, free upon request to publisher, College Station, Texas. Windows are designed, the author concludes, with a view to their mechanical performance and weatherproofing; more attention should be given to how the air comes in when the window is open.

ANNOTATED LIST OF BIRDS OF BARRO COLORADO ISLAND, PANAMA CANAL ZONE—Eugene Eisenmann—*Smithsonian Institution*, 62 p., paper, 45 cents. In spite of the fact that Barro Colorado Island has been reserved for scientific purposes for the past 30 years, the survey of resident bird life is still incomplete.

A CHANCE TO LIVE: The Story of the Lost Children of the War—John P. Carroll-Abbing, translated by Carol Della Chiesa—*Longmans, Green*, 216 p., illus., $3.00. A priest tells of his experiences in trying to aid the hungry, the wounded, the lonely in Italy during the war and the rescue of thousands of homeless children in towns similar to Boy's Town.

CHILDREN IN TROUBLE: An Experiment in Institutional Child Care—Frank J. Cohen—*Norton*, 251 p., $3.50. Describing a non-punitive method of dealing with child delinquents in an institution.

THE CITY—Rod and Lisa Peattie—*Schuman*, 108 p., illus., $2.50. A book for children telling how cities were built up and how neighborhoods decay. Life in the world's first city is described as well as that of a modern metropolis.

CONFLICT OF LOYALTIES: A Series of Addresses and Discussions—R. M. MacIver, Ed.—*Institute for Religious and Social Studies (Harper)*, 150 p., $2.00. Here a group of writers from many fields discuss such modern problems as: The Hiroshima Issue, Deceiving the Public for the Public Good, Freedom and Interference in American Education, and recent invasions of privacy in connection with loyalty and other investigations.

COOKING WITH A FOREIGN ACCENT — Sunset Magazine—*Lane Publishing Co.*, 64 p., illus., paper, $1.00. Tested recipes for making those distinctive foreign dishes we all like. The recipes can be followed in the American kitchen, and are arranged by food rather than by nationality.

COTTRELL: Samaritan of Science—Frank Cameron—*Doubleday*, 414 p., $4.50. The biography of a prolific inventor who turned over profits from his patents to the Research Corporation to finance research. Among the best known of the processes he developed is the electrical precipitation of smoke.

ELECTRICAL FARM EQUIPMENT YOU CAN BUILD —*Westinghouse Electric Corporation*, 32 p., illus., paper, free upon request to publisher, School Service, Dept. T, Box 1017, Pittsburgh 30, Pa. Clear diagrams help in the building of these pieces of equipment from inexpensive materials.

ELEVENTH SEMIANNUAL REPORT OF THE ATOMIC ENERGY COMMISSION—Gordon Dean, Chairman—*Govt. Printing Office*, 211 p., illus., paper, free upon request to Commission, Washington 25, D. C. Review of major developments of the past six months, including a section devoted to fundamental research in plant science using radioactive isotopes.

THE FLYING NATION: The Story of the Bees—Dorothy E. Crowder—*Roy*, 156 p., illus., $2.50. Telling children what goes on in the community of the bees.

GEOGRAPHY OF LATIN AMERICA—Fred A. Carlson—*Prentice-Hall*, 3d ed., 569 p., illus., $6.75. A text intended to establish a better understanding of our neighbors to the south.

GEOLOGY OF THE SHASTA KING MINE, SHASTA COUNTY, CALIFORNIA—A. R. Kinkel, Jr., and Wayne E. Hall—*California Division of Mines*, 11 p., illus., paper, 50 cents. This mine was studied as a part of a survey of the West Shasta copper-zinc district made for the U. S. Geological Survey.

GUIDE TO EASIER LIVING—Mary and Russel Wright—*Simon and Schuster*, 2d printing, 199 p., illus., $2.95. Suggestions for the planning and furnishing of the rooms in your home to make your life easier and happier.

HAVING A BABY—Ruth Carson—*Public Affairs Committee*, 31 p., illus., paper, 25 cents. Information and advice for the young about-to-be mother. Written with the cooperation of the Maternity Center Association.

THE HEALTH OF THE EXECUTIVE—Industrial Hygiene Foundation—*Mellon Institute*, 2 p., illus., paper, free upon request to publisher, 4400 Fifth Avenue, Pittsburgh 13, Pa.

THE LAMP IS LIT: The Story of WHO—Ritchie Calder—*WHO* (Columbia University Press), 38 p., illus., paper, 25 cents. Half the people of the world do not know what health means. Here is the story of what WHO is doing to teach them.

MAN AND HIS BIOLOGICAL WORLD—Frank Covert Jean and others—*Ginn*, rev. ed., 631 p., illus., $5.00. An up-to-date revision of a popular college text.

ON DREAMS—Sigmund Freud, translated by James Strachey—*Norton*, 120 p., $2.50. About a year after the publication of his monumental "Interpretation of Dreams," Freud wrote this short discussion of the same topic. Made available to American readers for the first time.

PHOTOGEOLOGIC INTERPRETATION USING PHOTOGRAMMETRIC DIP CALCULATIONS—D. H. Elliott —*California Division of Mines*, 21 p., illus., paper, 50 cents. A method for calculating the inclination of hill slopes and of strata on vertical aerial photographs. A pocket stereoscope is the only instrument required.

PICTURE PRIMER OF ATTRACTING BIRDS—C. Russell Mason—*Houghton Mifflin*, 30 p., illus., $2.50. Charming color pictures of birds, houses, and the trees and shrubs that welcome birds will attract nature loving readers.

PLANET EARTH—Rose Wyler—*Schuman*, 156 p., illus., $2.50. A simply written account of our own planet in its relation to its neighbors and to us.

THE PLANETS: Their Origin and Development—Harold C. Urey—*Yale University Press*, 245 p., illus., $5.00. This Nobelist discusses the chemical processes that took place in the formation of the planets and the materials of which they are made.

PROSTATE GLAND DISORDER—Edwin W. Hirsch —*Greenberg*, 130 p., illus., $1.25. Presenting the author's theories about the origin and treatment of this common trouble.

RADIOCARBON DATING—Willard F. Libby—*University of Chicago Press*, 124 p., illus., $3.50. A complete description of radiocarbon method of dating archaeological and geological remains which will aid those constructing and operating equipment for this purpose.

THE RISE OF THE SKYSCRAPER—Carl W. Condit —*University of Chicago Press*, 250 p., illus., $5.00. The tragedy of the great fire in Chicago gave that city the opportunity to replace old buildings with modern constructions. Many architectural innovations developed there.

ROCKETS AND JETS—Marie Neurath—*Lothrop, Lee and Shepard*, 36 p., illus., $1.50. Showing children by means of brief text and clear pictures how rockets work and how jets drive airplanes, cars, ships and space ships.

SAFETY IN TODAY'S LABORATORIES—Harry M. Schwalb—*Fisher Scientific Company*—7 p., illus., paper, free upon request to publisher, 717 Forbes St., Pittsburgh 13, Pa. Reprint of a lead article in *Industrial Laboratories*, November, 1951. Local safety committees, as recommended by this article, are now being set up in industrial, research, and governmental laboratories.

SCIENCE FOR A BETTER WORLD—Morris Meister, Ralph Keirstead and Lois M. Shoemaker—*Scribner's*, 778 p., illus., $3.20. An interesting high-school science text with lots of "Things To Do."

THE SCIENCE OF PRECISION MEASUREMENT—*DoAll Company*, 256 p., illus., paper, $3.50. Includes various reference tables such as coefficients of expansion of metals, tolerances of

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The reason we are eating minute amounts now is that mashes containing some of the antibiotic drugs, such as aureomycin and terramycin, are being fed to young chicks and pigs to speed their growth.

Discovery that eggs from commercial hatcheries where antibiotic mashes are fed to chickens contain some of the antibiotics was made by Drs. Donald Greiff and Henry Pinkerton of St. Louis University, St. Louis, Mo.

They found this out in the course of experiments with the germs of typhus fever. These germs, called rickettsiae, were being grown on the yolk sacs of fertile eggs. When the hatcheries where the eggs came from started using antibiotic feeds, the rickettsiae failed to grow on the eggs. The antibiotics stopped the germs, just as they do when used to treat people sick with typhus fever and many other germ-caused diseases.

Antibiotics can get into milk, also. Cheese manufacturers earlier had discovered that the starter organisms for making cheese failed to grow in some lots of milk. This milk, they found, had come from cows that had gotten "shots" of antibiotics to cure them of mastitis.

These cows had gotten the antibiotics injected into their udders, where the mastitis-causing germs were. Feeding antibiotics to lactating dairy cows, however, does not result in any of the antibiotic getting into the milk, according to experiments just reported in the journal, SCIENCE (Feb. 22). These experiments were made by M. O. Haq, L. L. Rusoff and A. J. Gelpi, Jr., of the Louisiana Experiment Station at Baton Rouge.

Eggs are used for growing influenza germs to make anti-'flu vaccines. Influenza A virus will grow on the eggs from antibiotic-fed chicks, the St. Louis University scientists found. But they point out that other disease-fighting experiments in which eggs are used to grow the germs for research purposes may be affected.

Eating eggs, chickens and hogs that have antibiotics in them will not do any harm, in the opinion of the Food and Drug Administration. FDA officials point out that the amount in the egg or meat is so small it could not have any effect on humans eating it. Furthermore, ordinary cooking would destroy the antibiotics.

One possible adverse effect of feeding antibiotics to animals to speed their growth has been pointed out in a report by Drs. M. P. Starr and D. M. Reynolds of the California Experiment Station at Davis, Calif., to the AMERICAN JOURNAL OF PUBLIC HEALTH. These scientists warn that the spread of drug-fast strains of germs to larger animals could be serious since the value of the meat of these animals would justify treating them with antibiotics when they get sick.

Science News Letter, March 8, 1952

A female *fly* will lay about 500 eggs during her lifetime.

Books of the Week

from page 158

holes for various kinds of fits, and conversion tables from English to Metric System.

THE STRANGE STORY OF OUR EARTH: A Panorama of the Growth of Our Planet as Revealed by the Sciences of Geology and Paleontology—A. Hyatt Verrill—*Page*, 255 p., illus., $3.75. Translating the story of the earth, which is written in the enduring rocks themselves, into non-technical language.

STUDIES IN THE PSYCHOLOGY OF READING—William C. Morse, Francis A. Ballantine and W. Robert Dixon—*University of Michigan Press*, 188 p., illus., paper, $2.50; cloth, $3.00. Studies of eye movements of school children, graduate students and university professors. This work explodes the myth that some fast readers are able to take in a whole line or even paragraph at a single glance.

SURVIVAL IN WINTER—E. Laurence Palmer—*New York State College of Agriculture*, 31 p., illus., paper, single copies free upon request to publisher, Cornell University, Ithaca, N. Y. One of the Cornell Rural School Leaflets telling how to contrive necessary food and shelter out of common materials found in a winter landscape.

THIRTY-SIXTH ANNUAL REPORT OF THE NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS 1950—Jerome C. Hunsaker, Chairman—*Govt. Printing Office*, 977 p., illus., $7.25. Includes a number of research reports and a general account of work during the year.

WATER FOR PEOPLE—Sarah R. Riedman—*Schuman*, 151 p., illus., $2.50. The story, told for children, of what water is and does from the first rain to modern rainmaking.

YOUR PRECIOUS EYESIGHT: A Concise and Comprehensive Anthology of Questions and Answers—L. Lester Beacher—*Psychological Library*, 84 p., $3.00. Information for the layman about eye defects, use of glasses, eye exercises, viewing television, eye diseases and contact lenses.

Science News Letter, March 8, 1952

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—*Kirtley F. Mather, in American Scientist*

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Science News Letter, March 8, 1952

⚙ *BULLET-STOPPING plastic is made of a combination of alkyd resin and Fiberglas reinforcement. It has good electrical properties, dimensional stability, resistance to heat, and a high impact strength such that it will stop a .45 cal. automatic bullet.*

Science News Letter, March 8, 1952

⚙ *AIR FILTER for forced-draft hot-air furnaces and air-conditioning systems is a self-charging, electrostatic unit. It is made of a washable plastic and is capable of catching pollen and the most minute solids in cigarette smoke.*

Science News Letter, March 8, 1952

⚙ *NEW ELECTRON microscope has an electrostatic lens system which allows high image quality with direct magnifications up to 20,000 diameters. Its operation is announced as so simplified as to be comparable with an ordinary light microscope. It is adaptable for electron diffraction and stereo electron micrographs.*

Science News Letter, March 8, 1952

⚙ *GARDEN HOSE connector, for attaching the hose to a faucet, is made of cellulose acetate butyrate and is shown in the photograph. One part, with inside threads, screws directly on the faucet, and the other part, with outside threads, screws into the receiving end of the hose. A quick half-turn attaches the hose to the faucet and releases it.*

Science News Letter, March 8, 1952

⚙ *ELECTRIC GLUING unit, just perfected, allows plywood to be "welded" together within a matter of minutes. The portable, high-frequency device permits the use of one-quarter-inch plywood paneling to achieve a result comparing favorably with three-quarter-inch plywood.*

Science News Letter, March 8, 1952

⚙ *WATER-RESISTANT PAPER plates that do not get soggy and limp are made by impregnating sulfite paper with a melamine resin blend and molding the paper into the desired shape by compression. Disposable after use, the plates are greaseproof and heat resistant. They are made in dinner, compartmented and pie sizes.*

Science News Letter, March 8, 1952

⚙ *INFLATABLE MATTRESS which protects the body from cold, damp ground under extreme weather conditions, is designed for soldiers and others who sleep out-of-doors. When not in use, the mattress can be folded into a square of about 15 inches. It weighs about three pounds.*

Science News Letter, March 8, 1952

Do You Know?

A professional mover distributes effort over as much of his body as possible instead of overworking one set of *muscles.*

A full-size delta-shaped *aircraft* wing has been made of highly-polished molded plastic in Britain.

Lack of *oxygen,* caused by ice cover and water plant metabolism, is the principal cause of excessive deaths in fishes during winter.

More than 300 years of cultivation of almost every arable square foot of Barbados has virtually eliminated native *weeds* and weedseed on the island.

The most logical places to find *minerals* are where two different types of rock formations come together.

Airfield *runways* and taxi strips "softened" by jet fuel spillage can now be protected with a coating of new plasticized synthetic rubber and tar blend.

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